

**WAPMS 2010 Conference: Seattle Sophisticates**

**President's Message**  
**Robert Leavitt, WAPMS President**

Greetings to all! I know everyone is very busy as it is the height of the field work season. Aquatic weeds are growing like crazy with the hot weather, and now is the time to keep them under control. The technical information we share and the contacts we make at WAPMS help us do that. I can think of no better venue than WAPMS to learn about aquatic weed management in Western states.

We had a great 2009 meeting in Hawaii last March (see incriminating photos next page). The keynote speaker, Dr. Celia Smith of the University of Hawaii, gave a very interesting presentation on control of invasive algae in the marine environment. Though most of us don't work in the marine environment, many of the problems and control techniques were clearly recognizable and applicable in freshwater systems.

At the Business Meeting session of the WAPMS meeting in Hawaii, Tom Moorhouse was elected Vice-President and Program Chairperson, which opened up the Secretary-Treasurer position. Scott Shuler was elected Secretary-Treasurer. Many thanks to Tom for the great job he did in his year as Secretary-Treasurer, and welcome Scott. Scott was Secretary-Treasurer for the Midwest Aquatic Plant Management Society for many years so he brings a wealth of experience to this position. As one of his first responsibilities, Tom represented the WAPMS at the national APMS meetings in Milwaukee last month (July). WAPMS Director Lars Anderson and Past President Tom McNabb also attended the APMS meeting.

For next year's meeting, 2010, the WAPMS will be returning to Seattle. The WAPMS last met in the Seattle area, Bellevue, in 2004. This year we'll meet in the downtown area. Great restaurants, and not too far from Pike's Place Market. Our Vice-President and Program Chair, Tom Moorhouse, is busy with meeting plans. See Tom's Message below and a program and meeting update!

Other recent developments: The Board of Directors appointed Dr. Toni Pennington to be the WAPMS representative to the Western Regional Panel of the Aquatic Nuisance Species task force. She will bring an aquatic weed focus to this national panel. And I have been appointed by the Secretary of the California Department of Food and Agriculture as the first Acting Executive Director of the California Invasive Species Advisory Committee. I can bring an aquatic weed focus to this committee (more on this in a following article in this newsletter!).

The WAPMS Board and fellow members look forward to seeing all of you in Seattle in 2010.

**Notes on the 2010 Program**  
**Tom Moorhouse, Vice-President and Program Chair**

It is an honor to have been elected as WAPMS Vice President and to serve as this year's Program Chair. A great program was put together for Hawaii and I know we all enjoyed the friendly (and warm!) atmosphere.

(cont'd. pg. 3)

2009 Conference Photos



WAPMS officers (l-r): Tom Woolf (Director), Jill Winfield (Director), Pat Akers (newsletter), Tom Moorhouse (new VP), Robert Leavitt (new Pres), Toni Pennington (Director and Scholarship), Tom McNabb (new past-Pres), Lars Anderson (Director), Scott Shuler (new Sec-Treas)



Cocktails before the WAPMS dinner at the Moana Surfrider Hotel



WAPMS beach fantasies

**Notes on the Program (cont'd.)**

The time is fast approaching for you to let us know of the important work you are doing this year in the various aspects of aquatic plant management, such as legislative/regulatory, research, biology, field trials, and field projects and programs.

Next year’s special sessions are tentatively scheduled to include a ½-day Non-Native Spartina Eradication session, one on Flowering Rush (*Butomus unbellatus*) Developments, and a third on General Hydrilla Eradication and Egeria Densa Management in the Sacramento / San Joaquin River Delta. There will also be a regular session covering recent Court Decisions, the NPDES issue, and the New “US Waters” Bill as well as others on Detection & Monitoring, and on Marine Invasive Plants and Algae. In addition, with the recent changes in the availability of products for irrigation systems, we are considering a session on aquatic weed control in western canals, and the tools available to replace those that may be lost.

Call or e-mail should you be interested in managing a session.

The schedule for submitting titles and abstracts is provided below. Remember, the second Call for Papers is just around the corner, on October 5. We decided to move forward the completion date for the Final Program to allow those interested in attending additional time to make preparation.

<b>Steps to the 2010 Program:</b>	<b>Date</b>
<b>1st Call for Papers</b>	<b>Summer Newsletter</b>
<b>2nd Call for Papers</b>	<b>October 5, 2009</b>
<b>Title and Abstracts Due</b>	<b>December 15, 2009</b>
<b>Final Program</b>	<b>January 15, 2010</b>

See you in Seattle for the 29<sup>th</sup> Annual Meeting!

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## 2010 Meeting and Hotel Info Tom Moorhouse, Program Chair



The 29<sup>th</sup> Annual Meeting will be held in Seattle, Washington, from March 28 to March 31, 2010 at the Sheraton Seattle Hotel (1400 Sixth Avenue, Seattle, WA 98101). A block of rooms has been reserved with room rates starting at \$149.00 per night, plus applicable taxes. A toll free number is available for booking reservations (see below) and a customized website will also be created by the Hotel to allow booking. Additional information about this “StarGroups” website will be made available in the WAPMS Winter Newsletter.

A deposit equal to one night’s stay is required to hold each individual’s reservation. Such deposit shall serve to confirm the reservation for the date(s) indicated, and, upon check-in shall be applied to the first and/or final night of the reserved stay. These deposits paid by individuals are refundable if notice is received at least seventy-two (72) hours prior to arrival and a cancellation number is obtained.

Meeting registration and exhibitor setup will begin at 2:00 PM on Sunday, March 28<sup>th</sup> and will be followed by a reception.

The Seattle Sheraton enjoys a convenient downtown location. The historic Pike Place Market, the Seattle Art Museum, the Space Needle, Experience Music Project, and a host of other exciting attractions are right nearby. See a show at the Fifth Avenue Theater or the Paramount Theater. Experience the opera or ballet at McCaw Hall. Enjoy the Seattle Symphony at Benaroya Hall. All are just a short walk from the hotel. A short trip will take you to bustling Pioneer Square or the colorful International District.

There’s something for everyone, so bring your family and friends to enjoy Seattle for up to three days before and three days after the meeting.

### **StarGroups**

**Individual Call-In: 888-627-7056**  
**Call with the following information:**  
**Guest’s first and last name, arrival date and time, departure date, and bed type preference (king or two double beds)**

**All rooms are non-smoking**

## **2009 Scholarship Winner Toni Pennington, Scholarship Chair**

The 2009 Barbra H. Mullin Memorial Scholarship attracted five students this year – representing three Western states. The students were evaluated on a written statement, resume, academic transcripts, and letters of support. In alphabetical order, the following students submitted a scholarship application:

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- Rachel Clausing, PhD student, University of California at Los Angeles
- Charlene Mercer, undergraduate student, Portland State University
- Lynda Moore, MS student, Portland State University
- Gwen Santos-Conahan, MS student, San Francisco State University
- Jessica Silver, MS student, University of Washington

The scholarship committee selected Rachel Clausing from UCLA for her project, *Effects of Anthropogenic Nutrient Inputs on Rocky Intertidal Algal Community Dynamics*. The committee felt that Ms. Clausing's project was particularly timely, given the recent increase in marine algae invasions and harmful algae blooms. In addition to the \$1,000 scholarship, the Board of Directors unanimously agreed to support Ms. Clausing's travel to the 2010 WAPMS meeting in Seattle, Washington, provided she provides an update on her research progress.

I wish all the applicants the very best of luck throughout their academic and career endeavors. I encourage eligible students to re-apply for the 2010 scholarship. Also, I would like to thank our distinguished (and hard working judges): Dr. Marion Wittmann, Tahoe Environmental Research Center; Dr. Scott Nissen, Colorado State University; Dr. Cody Gray, United Phosphorus, Inc., and Dr. Lars Anderson, USDA-ARS. Lastly, many thanks to the 2008-2009 Board of Directors for awarding the scholarship and for offering to send Ms. Clausing to the 2010 WAPMS meeting.

Looking ahead to 2010, please see the announcement in this newsletter and watch your in-boxes for an electronic version to

distribute to potential students or academic advisors.

### **Scholarship Announcement Toni Pennington, Scholarship Chair**

Know a student in need of funding?

If so, encourage them to apply for the 2010 Barbra H. Mullin Scholarship. The top candidate receives \$1,000 and a year membership to the WAPMS.

Application materials include: a short resume/curriculum vitae, academic transcripts, a statement, and two letters of support. Preference is given to students from western states and all students must be engaged in course work or research related to the biology, ecology, management, or education of aquatic plants.

The application deadline is February 26, 2010. Further details will soon be posted at: [http://www.wapms.org/wapms\\_scholarships.htm](http://www.wapms.org/wapms_scholarships.htm) or by contacting Toni Pennington at [toni.pennington@tetrattech.com](mailto:toni.pennington@tetrattech.com). Previous eligible applicants are encouraged to apply.

### **Student Registration Waiver**

Students attending the WAPMS conference have their registration fees waived. The student need not provide a presentation or poster; however, their participation is encouraged. Participation fosters increased interaction between students and other researchers, industry representatives and managers. For more information check the WAPMS website ([www.wapms.org](http://www.wapms.org)) for conference updates.

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## Treasurer's Report Scott Shuler, Secretary-Treasurer

### Treasurer's Report – Scott Shuler

The WAPMS has benefitted in recent years from excellent attendance and generous sponsorship from our many Gold, Silver and Bronze Sponsors. Over the last two years

our finances have declined due to increased costs and decreased attendance/sponsorship. The WAPMS Board will be working to correct this trend and we anticipate an excellent attendance in Seattle in 2010. We appreciate all the past support provided our Corporate Sponsors and look forward to their continued support of the Society.

January 1, 2009 - August 13, 2009

#### Balance as of January 1, 2009

Checking Balance	\$6,223.88
CD	\$20,000.00
	<b>\$26,223.88</b>

#### Income

Income from 2009 Conference	\$13,259.83
Membership (2009)	\$50.00
CD Interest	\$272.44
Checking Account Interest	\$12.35
<b>Subtotal</b>	<b>\$13,594.62</b>

#### Expenditures

Bank Charges	\$135.00
CE Hours Application	\$135.00
Conference Hotel	\$14,375.74
Conference Printing	\$467.95
Conference Speaker T&E	\$6,959.69
<b>Conference sub-total</b>	<b>\$21,938.38</b>
Office Supplies	\$31.79
Postage & Shipping	\$68.70
Utilities: Internet	\$243.82
WAPMS Student Scholarship	\$1,000.00
<b>Subtotal</b>	<b>\$23,417.69</b>

Balance as of August 13, 2009

**\$16,400.81**

**Members' Submissions**  
**Short Notes of Interest to the Society\***

**California Creates a State-wide Invasive Species Council**

Robert Leavitt, Asst. Director, California Department of Food and Agriculture

Six California agencies have combined forces as the Invasive Species Council of California (ISCC) to prevent, detect, and manage invasive pests, including aquatic pests and weeds. The Council's members are the heads of state agencies, making it the California equivalent of the National Invasive Species Council (NISC). The Council addresses Invasive Species issues concerning all taxa and habitats.

Each agency brings different strengths to the Council and has different roles in it. The permanent Chairperson for the ISCC is the Secretary of the California Department of Food and Agriculture (CDFA). The CDFA maintains the state Noxious Weed List and manages invasive pests in rangelands, along highways, in urban and suburban areas, and rivers and streams-in particular, hydrilla. The permanent Vice-Chair is the Secretary of the California Natural Resources Agency (CNRA). The CNRA manages invasive pests in California forests, state parks, marine environments, estuaries, lakes, rivers, and streams-in particular, Brazilian elodea and water hyacinth in the Sacramento-San Joaquin River Delta. The other members of the ISCC are the Secretaries of the California Environmental Protection Agency, the California Business, Transportation and Housing Agency (which manages invasive pests along California's highway system), the California Health and Human Services Agency, and the California Emergency Management Agency.

The ISCC is supported by a group of technical and pest management experts, the California Invasive Species Advisory Committee (CISAC). This is the California equivalent of the national Invasive Species Advisory Committee (ISAC). When forming the first CISAC, the ISCC tried to balance various interests: federal government agencies, commercial interests, non-governmental organizations, private citizens; aquatic and terrestrial interests; and weeds, insects, diseases, and vertebrate pests. The CISAC will also form 'working groups', inviting other experts to participate. Aquatic weed management is slated to be one of the 'working groups'.

I am the current Acting Executive Director of the CISAC and represent aquatic weed management. Other CISAC members represent other aquatic pests such as pest fish, mussels and clams, seaweeds, etc. One agency designee, Susan Ellis, and one CISAC member, Dr. Joe DiTomaso, are also members of the national ISAC. For more information on the ISCC or the CISAC, see the following web site: [www.iscc.ca.gov](http://www.iscc.ca.gov) For more information on the NISC or the ISAC, see their web site: [www.DoI.gov/NISC](http://www.DoI.gov/NISC)

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## **Invasive Brown Kelp Spreads to San Francisco Bay**

by Lars W.J. Anderson, USDA- ARS Exotic and Invasive Weed Research

For those of you who've dined on seaweed salads or miso (Japanese soup), the key ingredient is "wakame", a brown kelp native to Japan and Korea, more precisely known as *Undaria pinnatifida*. Unfortunately, this rapidly growing alga, which can easily grow to 2 meters, became established in our California coastal waters several years ago (Silva et al. 2002) around Catalina Island, Santa Barbara Harbor and recently Monterey Harbor. Other infestations have occurred in Mexico, Australia, New Zealand, Argentina, and coastal European/Mediterranean areas. Some limited control has been achieved through physical removal, including efforts by Dr. Steve Lonhart (NOAA) in Monterey Harbor and others in New Zealand as well (Wooten et al. 2004).

*Undaria* made a big leap northward when it was found for the first time in San Francisco Bay in May this year. Dr. Chela Zabin and scientists affiliated with the Smithsonian San Francisco Research Center (Tiburon) discovered the *Undaria* while conducting surveys on boat hulls for other invasive species. Known infested sites to date include a yacht harbor near Crissy Field (a short distance inside the Golden Gate), and another marina near AT&T Stadium (home of the Giants) (see map next page).

### **Reproduction and dispersal**

*Undaria* exhibits a heteromorphic, alternating life cycle, typical for kelps, in which the large, macroscopic form (sporophyte) grows after anchoring to a substrate. When the sporophyte is mature, it forms distinct structures call "sporophylls" at the base of the stipe (just above the

holdfast). The sporophylls eventually release microscopic, haploid spores that settle and produce the gametophytes, which in turn form the gametes. After the gametes fuse to form the sporophyte, it grows to 1 to 3 meters. Therefore, management is focused on removing the sporophytes *before* they are able to form sporophylls, and certainly before they release spores. However, the sporophytes are very small in early stages and can easily be missed. Divers in SF Bay found sporophytes as small as 2 cm, and some were hidden among other attached algae and invertebrates. However, the bright side is that the distinctive central stipe and flat, broad blade make this species fairly easy to distinguish.

Since *Undaria* can easily hitchhike attached to boats, mooring lines and docks, marinas are highly susceptible. It's not known how it got to SF Bay, or how extensive the infestation is. More surveys are planned, and funding has been requested from the Western Regional Panel.

### **Impacts**

Why the concern? In addition to the obvious problems associated with boat-hull fouling, *Undaria* can physically displace native organisms and alter habitat structure. An added concern is spread to oyster production areas in Tomales Bay. So far surveys have not detected *Undaria* in Tomales Bay (Anderson, pers. comm.), but because of the potential for movement via boats, continued surveys are essential. Given its known distribution, *Undaria* could move farther north into Oregon and Washington.

### **Response to date**

Since the initial find in SF Bay, Dr. Zabin has coordinated efforts to remove *Undaria* there. The team includes scientists from the Smithsonian Environmental Research





San Francisco, with the two infested areas highlighted by yellow circles.



Mature sporophyte, up to 2 m



Holdfast at bottom, then small horn-shaped sporophylls, blending upward into body of sporophyte



**Small sporophyte from SF Bay, attached to a dock**

Center, the California State Lands Commission, the Monterey Bay National Marine Sanctuary, NOAA Restoration Center, and the USDA-ARS. This first step, with the help of Dr. Lonhart and his crew, is important to stave off further dispersal, but expanded surveys will be needed to fully assess the threat. On August 20, key federal, state, and NGO representatives will meet to more fully develop a response plan and identify additional resources. Unfortunately, options are quite limited as there are no algaecides or herbicides with EPA registrations for this marine pest (Anderson 2007).

For news coverage see:

[http://www.msnbc.msn.com/id/31891137/ns/us\\_news-environment/](http://www.msnbc.msn.com/id/31891137/ns/us_news-environment/) and [http://www.nytimes.com/2009/08/02/science/earth/02seaweed.html?\\_r=2&emc=eta1](http://www.nytimes.com/2009/08/02/science/earth/02seaweed.html?_r=2&emc=eta1)

References:

Anderson, L.W.J. 2007. Control of invasive seaweeds. *Botanica Mar.* 50: 418-437.

Silva, P. C., R. A. Woodfield, A. N.Cohen, L. H. Harris, & J. H.R.Goddard. 2002. First report of the Asian kelp *Undaria pinnatifida*

in the northeastern Pacific Ocean. *Biological Invasions* 4:333-338.

Wootton, D. M, O'Brien, C. Stuart, M.d. and Fergus, D.J. 2004. Eradication success down under: heat treatment of a sunken trawler to kill the invasive seaweed *Undaria pinnatifida*. *Mar. Poll. Bull.* 49: 844-849.

### **Low-cost Geo-referenced Aerial Photography for Aquatic Weeds**

by Terry McNabb, Biologist, AquaTechnex

Trimble Navigation recently published an article about two aquatic weed control projects and the use of GPS/GIS technologies. Portions of this article focus on a low cost aerial photography technique developed by AquaTechnex biologists. For the past few years, our team has used an airborne digital GPS camera to collect photography of target shorelines. Our flight protocols optimize water penetration and lighting on the target plant communities. By running a Trimble (or similar) GPS receiver that collected points along the flight line, and shooting continuous coverage of the littoral area, we can then link the GPS points and digital images and drop them into ArcGIS exactly where they were taken. This imagery is then analyzed and polygons are created of aquatic plant beds and where possible invasive aquatic plant beds. The maps are then field checked by boat to confirm the composition of the plant communities in each polygon. On the Bonner County Project, over 90 miles of shoreline was filmed in about one hour for flight time. Upon landing, the image data and the GPS positions were merged and the information was uploaded to ArcGIS and available for analysis in about 15 minutes. This technology has applications for scouting and mapping aquatic vegetation.

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The cost of data acquisition can be as low as \$150.00 per hundred miles. The full article can be read at

[http://trl.trimble.com/docushare/dsweb/Get/Document-456858/022501-209\\_Weed%20Management%20Aquatechnex\\_CS\\_MGIS\\_0209\\_LR.pdf](http://trl.trimble.com/docushare/dsweb/Get/Document-456858/022501-209_Weed%20Management%20Aquatechnex_CS_MGIS_0209_LR.pdf)

### **Advances in Technology for Eurasian watermilfoil (*Myriophyllum spicatum*) and other submersed plants.**

By Shaun Hyde and Scott Shuler, SePro Corporation

SePRO Corporation remains dedicated to innovative research and development of new technologies to address unmet needs of aquatic plant managers. These research and development efforts have recently resulted in two new treatment innovations for selective and systemic control of Eurasian watermilfoil and other broadleaf aquatic weeds.

Sculpin G is an aquatic herbicide formulation technology breakthrough. As the only dimethylamine salt formulation of 2,4-D formulated on granules, Sculpin G provides an effective and targeted treatment technology for systemic submersed weed control. Sculpin G is different than 2,4-D BEE granules: 1) amine v. ester formulation, 2) release profile less influenced by water pH, 3) formulated on a biodegradable granule, 4) no swimming restrictions (see herbicide label).

Renovate MAX G is an aquatic herbicide technology innovation. A first for aquatic plant managers, SePRO has developed and formulated two auxin herbicides in one powerful formulation (patent pending). Renovate MAX is a synergistic auxin ratio of Renovate (triclopyr) and Sculpin (2,4-D amine) providing improved efficacy.

These technology innovations provide aquatic plant managers novel solutions for selective and systemic control of broadleaf aquatic weeds using a targeted and biodegradable granule delivery technology. For additional information about these new technologies, please contact your SePRO Aquatic Specialist.

### **Controlling Eurasian Watermilfoil and Curlyleaf Pondweed in Noxon Rapids Reservoir, Montana**

By Kurt Getsinger, US Army Corp of Engineers

During 20-31 July 2009, scientists from the US Army Engineer Research and Development Center conducted herbicide trials for controlling mixed stands of Eurasian watermilfoil and curlyleaf pondweed around Noxon Rapids Reservoir, Montana. Cooperators included Mississippi State University, North Carolina State University, Clean Lakes, Inc. and AVISTA Corp. Two 20-acre herbicide treatment plots, representing off-shore plant stands and stands along shorelines, were used for the trials based on vegetation assessments conducted in 2008. Comparable reference sites were selected to compare treatment efficacy. The systemic herbicide, triclopyr (Kraken®), was combined with the contact herbicide, endothall (Aquathol® K), in an effort to control both Eurasian watermilfoil and curlyleaf pondweed, since they occur as mixed stands. Application rates and treatment timing were selected to verify results of previous small-scale trials, and applied based on water-exchange evaluations conducted in plant stands prior to treatments. Herbicides were applied using a multi-depth water injection system (LittLine®, Clean Lakes Inc.), calibrated for maximum delivery to submersed stands. Water samples are being analyzed for

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herbicide residues to determine actual concentrations and exposure times (CET) in the treated plots, and to link them with efficacy. Analysis of these samples will also determine dissipation of residues within, and downstream of, treated plots. Water-exchange was measured with the inert tracer dye, rhodamine WT, approved for use by the US Environmental Protection Agency in surface waters, using fluorometric instrumentation devices. As with the herbicides, dye was applied using the multi-depth injection system, simulating an operational treatment. Dye applications provided an estimate of herbicide contact time, and were used to refine CET relationships to select the application rates most likely to provide maximum control. Pretreatment (2009), 6 week post treatment (2009), and 52 week post-treatment (2010) surveys will assess quantitative changes in plant communities to determine efficacy and any injury to non-target vegetation. This demonstration was coordinated through Sanders County Eurasian Watermilfoil Task Force (SCEWMTF), Montana State University Extension Service (Sanders County Office), and the Montana Department of Agriculture, as the first step in developing methods to control these invasive species in Montana. Support for the project was provided by SCEWMTF, AVISTA Corp., Montana Noxious Weed Trust Fund, the Aquatic Ecosystem Restoration Foundation, United Phosphorus International, and Phoenix Environmental Care, and Cygnet Enterprises.

### **And a River Runs Through It: Why it takes a plan to keep your water feature flowing**

By Patrick Simmsgeiger, Diversified Waterscapes, 27324 Camino Capistrano, Laguna Niguel, CA

It provides a beautiful finishing touch to any landscape. A source of refreshment for the eyes, ears and the soul, it may be a gift of nature or the creation of a contractor. Still, whether it takes the form of a lake, stream, pond or other body of water, water features are an investment for any Home Owner Association (HOA) and they need professional care in order to keep them looking as good as the day they were created. All water bodies experience problems, but by planning ahead you can limit your troubles and retain the value of your investment.

If possible, a HOA should consider the initial design of a water feature as crucial to proper function and maintenance. In reality, most water features are built and filled by the time a HOA takes control. Water maintenance professionals understand and will accept this challenge, but don't be surprised if they bring the design to your attention, as the design, or lack thereof, affects the functionality.

Once your water feature has been built, plan ahead by having a well thought out budget and reserve, updated yearly. This budget should allow for regular maintenance and will include allowances for repairs and possible upgrades. Once you have your budget, the process of hiring of a water maintenance professional should include some planning as well.

Request bids from at least three different companies so that you have a choice and can make an informed decision. The water

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maintenance company should validate your trust in their ability to maintain your water feature. They should provide proof of licenses, permits, general liability, workers compensation, vehicle insurance and a proven track record in the form of verifiable long-term references.

Once you find a qualified company, listen to their suggestions as you would anyone on your staff, from your accountant to your landscape company. They are devoted to the beautification of aquatic environments and

they have an investment in maintaining your trust. The better job they do, the more likely you are to keep them on the job.

An aquatic environment is a treasure to enjoy and cherish. The key to keeping the water flowing is a little planning, and the support of a water maintenance professional.

**\* Editorial Guidelines for Members' Submissions:** Articles may be on any subject of general interest to the Society, such as news on members, updates on projects, or announcements of new products. They must include a byline with the authors' names. Responsibility for the article lies with the authors. All articles of 300 words or less will be printed, as long as they pertain to the business of the Society. The Newsletter editor will edit them only for spelling, grammar, or readability. Articles longer than 300 words will be submitted to the editorial board for approval. They may be edited for length or content, in consultation with the author. Articles may be submitted as a Word document, a text file, or text in an email message.